

UNIT 1 DAY 3

Section 1.2 & 1.3

Order and Absolute Value

PROPERTIES OF ORDER

For all real numbers a , b , and c :

TRICHOMY PROPERTY

either $a < b$, or $a > b$, or $a = b$

TRANSITIVE PROPERTY

If $a < b$ and $b < c$, then $a < c$.

ADDITION PROPERTY

If $a < b$, then $a + c < b + c$.

MULTIPLICATION PROPERTY

If $a < b$, and if $c > 0$, then $ac < bc$.
If $a < b$, and if $c < 0$, then $ac > bc$.

ABSOLUTE VALUE

For all real numbers a ,

$$|a| = \begin{cases} a & \text{if } a \geq 0 \\ -a & \text{if } a < 0. \end{cases}$$

PROPERTIES OF ABSOLUTE VALUE

$$|a| \geq 0$$

$$|-a| = |a| \quad |-6| = |6|$$

$$|a| \cdot |b| = |ab|$$

$$\left| \frac{a}{b} \right| = \frac{|a|}{|b|} \quad (b \neq 0)$$

$$|a + b| \leq |a| + |b| \quad (\text{called the triangle inequality})$$

~~(called the triangle inequality)~~

Write each expression without absolute value bars.

1) $|\sqrt{-3} + 2|$

$$-\sqrt{3} + 2$$

$$\text{or } 2 - \sqrt{3}$$

2) $|\sqrt{-3} + 1|$

$$\downarrow$$
$$-(-\sqrt{3} + 1)$$

$$\boxed{\sqrt{3} - 1}$$

3) $|\sqrt{-3} - 2|$

$$-(-\sqrt{3} - 2)$$

$$\sqrt{3} + 2$$

4) $|2 - \pi| =$

$$-(2 - \pi)$$

$$\pi - 2$$

5) $|x - 4|$ if $x < 4$

$$-(x - 4)$$

$$-x + 4 \text{ or } 4 - x$$

6) $|\pi - 4|$

$$-\pi + 4$$

$$4 - \pi$$

8) $|p^2 + 10| =$

$$p^2 + 10$$

9) $|-3 - \pi| + 7 =$

$$3 + \pi + 7$$

$$10 + \pi$$

10) $|\sqrt{12} + 2| =$

$$\sqrt{12} + 2$$

$$2\sqrt{3} + 2$$

Use the concepts of this section to determine what signs on the values of x and y would make the statement true.

1) $xy < 0$

$x < 0$ and $y > 0$

or

$x > 0$ and $y < 0$

2) $\frac{x}{y^2} < 0$

$x < 0$

and

$y \neq 0$

and

$y < 0$ or $y > 0$

HOMEWORK

UNIT 1 DAY 3

p. 23-4: 29-48, 60-64